

R E M A R K S

Reconsideration of the present application, as amended, is respectfully requested.

The December 17, 2002 Office Action and the Examiner's comments have been carefully considered. In response, claims are cancelled, amended and added, and remarks are set forth below in a sincere effort to place the present application in form for allowance. The amendments are supported by the application as originally filed. Therefore, no new matter is added.

Inasmuch as the present amendment raises no new issues for consideration and, in any event, places the present application in condition for allowance or in better condition for consideration on appeal, its entry under the provisions of 37 CFR 1.116 are respectfully requested.

PRIOR ART REJECTION

In the Office Action claims 2, 3, 10, 14, 20, 22 and 28 are rejected under 35 USC 102(b) as being anticipated by JP 8-32847 (Ueno et al.).

In response, independent claims 2, 14 and 22 are amended to more clearly define the present claimed invention over the cited reference.

The present claimed invention as defined by the independent claims is directed to an image processing apparatus and imaging processing method for joining parts, and a recording medium for recording programs with the above structure. The image

processing apparatus includes image input means for inputting a plurality of images of one composition which are picked up under different exposure conditions, correction parameter calculating means for determining correction parameters between the plurality of images input from the image input means, image display means for displaying the plurality of images input from the image input means, correction parameter setting means for adjusting the correction parameters determined by the correction parameter calculating means while differences in brightness between the plurality of images displayed by the image display means are checked by a user, brightness correcting means for correcting the brightness of the at least one image in accordance with the correction parameters adjusted by the correction parameter setting means, and image synthesizing means for synthesizing the plurality of images including the at least one image, the brightness of which is corrected by the brightness correcting means.

Ueno et al, as is clear from the flowchart of Fig. 12, discloses that after designation of a start aperture value, an aperture variation distance value and an adequate brightness value, a plurality of images are picked up based on the set condition, and the parts of picked-up images of a subject that have appropriate brightness are combined into one image which has appropriate brightness as a whole.

In the present claimed invention, correction parameters for use in correcting the differences between a number of picked-up images, such as exposure time ratios, are determined from a number of image data of the picked-up images (the condition under which the images are picked up is not known by the user). Then, the images are displayed on the screen, and the user adjusts the correction parameter by moving an imaginary knob on the screen, while viewing the displayed image. The displayed image is adjusted in brightness by adjusting the correction parameter. The user can adjust the correction parameter until the brightness of the image is adequately corrected. Accordingly, by using such an adjusted correction parameter, the present invention can combine the input images into an image having a wide dynamic range.

As is clear from the foregoing, the present claimed invention is patentable over Ueno et al.

In Ueno et al., a number of images (eight in the example of Fig. 10) are picked up, while varying the exposure condition set by the user. Then, parts of the picked-up images that have been appropriately exposed are selected and combined into one image. In contrast in the present claimed invention, an exposure condition, which is not known to the user, is determined from images (two in one embodiment) picked up under the exposure condition. The user adjusts the exposure condition, while

viewing the screen. The picked-up images are combined into one image by using the adjusted exposure condition.

That is, Ueno et al does not disclose, teach or even remotely suggest the "correction parameter calculating means", "correction parameter setting means", "brightness correcting means", and/or "image synthesizing means" as recited in amended claim 2.

Independent claims 14 and 22 are patentable over the cited reference for reasons, *inter alia*, set forth above in connection with claim 2.

Dependent claims 3, 10, 20 and 28 are patentable over the cited reference in view of their dependence on one of claims 2, 14 and 22.

NEW CLAIMS

New claims 29-34 are added to the present application. Claim 29 is dependent on claim 2 and defines further features of the image processing apparatus.

Claim 30 corresponds to claim 2 but is in non-means-plus-function format.

Claim 31 corresponds to claim 10 but is dependent on claim 30.

Claim 32 corresponds to new claim 29 but is dependent on claim 30.

New claims 33 and 34 correspond to new claim 29 but these claims are respectively dependent on claims 14 and 22.

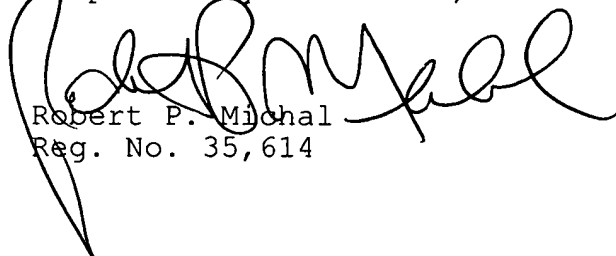
The present application as amended includes 7 independent claims and 32 total claims. The highest number of claims for which payment was previously made is 6 independent claims and 30 total claims. In view of the foregoing, submitted herewith is a check in the amount of \$120 for the addition of one (1) independent claim and two (2) total claims above the highest number of claims for which payment was previously made. If any additional fees are due or if any overpayment has been made, please charge or credit our deposit account number 06-1378 for such sum.

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Entry of this Amendment under the provisions of 37 CFR 1.116, allowance of the claims and the passing of this application to issue are respectfully solicited.

If the Examiner has any comments, questions, objections or recommendations, the Examiner is invited to telephone the undersigned at the telephone number given below for prompt action.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Robert P. Michal". The signature is fluid and cursive, with a large initial "R" and "M".

Robert P. Michal
Reg. No. 35,614

Frishauf, Holtz, Goodman & Chick, P.C.
767 Third Avenue - 25th Floor
New York, New York 10017-2023
Tel. No. (212) 319-4900
Fax No. (212) 319-5101
RPM/yu

VERSION WITH MARKINGS TO SHOW CHANGES MADE
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Claims 2, 10, 14, 20, 22 and 28 have been amended as follows:

2. (Twice Amended) An image processing apparatus comprising:

image input means for inputting [one composition as] a plurality of images [taken with a different exposure] of one composition which are picked up under different exposure conditions;

correction parameter calculating means for determining correction parameters between the plurality of images input from the image input means;

image display means for displaying the plurality of images input from the image input means;

correction parameter setting means for [setting] adjusting the correction parameters [necessary to correct a brightness of at least one image of said plurality of images having a different exposure] determined by the correction parameter calculating means, while differences in brightness between the plurality of images displayed by the image display means are being checked by a user;

brightness correcting means for correcting the brightness of said at least one image in accordance with [said set] the

correction parameters adjusted by the correction parameter setting means; and

[image display means for displaying said one image corrected by said brightness correcting means and the other images of said plurality of images; and]

image synthesizing means for [converting said one image and the other images of said plurality of images to be placed in a displaying range of said image display means based on said set correction parameters so that the images displayed by the image display means are displayed with almost the same brightness, thereby joining said plurality of images] synthesizing the plurality of images including said at least one image, the brightness of which is corrected by the brightness correcting means.

10. (Twice Amended) The image processing apparatus according to claim [3] 2, wherein [said brightness correcting means corrects the image by changing an exposure ratio between a plurality of images, which is used as said] the correction parameters[, in accordance with differences in brightness between said plurality of images displayed by said] determined by the correction parameter calculating means are exposure time ratios at which the plurality of images to be input by the image input means are picked up, respectively, and the correction parameter setting means has a function of displaying an imaginary adjustment knob on a display screen of the image display means

such that each of the exposure time ratios is adjustable by a user.

14. (Twice Amended) An image processing method comprising:
an image input step of inputting a plurality of images
[obtained by taking one composition at different exposures] of
one composition which are picked up under different exposure
5 conditions;

a correction parameter calculating step of determining
correction parameters between the plurality of images input
during the image input step;

10 an image display step of displaying the plurality of images
input during the image input step;

a correction parameter setting step of [setting] adjusting
the correction parameters [for correcting the brightness of at
least one of said plurality of images taken with different
exposures] determined during the correction parameter calculating
15 step, while differences in brightness between the plurality of
images displayed during the image display step are being checked
by a user;

[an image] a brightness correcting step of correcting the
brightness of said at least one image in accordance with the
20 [set] correction parameters adjusted during the correction
parameter setting step;

[an image displaying step of displaying at least one of the
images corrected in the image correcting step;] and

an image synthesizing step of [combining said
25 plurality of images corrected in brightness in the image
correcting step, into one image to be displayed within a range of
the image display step, by inferring an amount of incident light
obtained when said composition is input in the image input step,
from said plurality of images which have been input and said
30 correction parameters which has been set] synthesizing the
plurality of images including said at least one image, the
brightness of which is corrected during the brightness correcting
step.

20. (Twice Amended) The image processing method according to
claim 14, wherein said [image correcting step corrects the image
by changing an exposure ratio between a plurality of images,
which is used as said] correction parameters[, in accordance with
5 differences in brightness between said plurality of images
displayed in said image displaying step] determined during the
correction parameter calculating step are exposure time ratios at
which the plurality of images to be input during the image input
step are picked up, respectively, and the correction parameter
10 setting step displays an imaginary adjustment knob on a display
screen such that each of the exposure time ratios is adjustable
by a user.

22. (Twice Amended) A recording medium recording computer
programs for correcting a plurality of images obtained by taking

one composition with different exposures, to provide an image having a desired brightness, said recording medium comprising:

5 an image inputting program for inputting [one composition in the form of] a plurality of images [photographed at different exposures] of one composition which are picked up under different exposure conditions;

10 a correction parameter calculating program for determining correction parameters between the plurality of images input from the image inputting program;

image display program for displaying the plurality of images input from the image inputting program;

15 a correction parameter setting program for [setting] adjusting the correction parameters [for correcting the brightness of at least one of said plurality of photographed images taken at different exposures] determined by the correction parameter calculating program, while differences in brightness between the plurality of images displayed by the image display
20 program are being checked by a user;

 [an image] a brightness correcting program for correcting the brightness of said at least one image in accordance with the [set] correction parameters adjusted by the correction parameter setting means;

25 [an image displaying program for displaying at least one of the images corrected in accordance with the image correcting program;] and

an image synthesizing program for [combining said plurality of images corrected in brightness in accordance with said image correcting program, into one image to be displayed within a range in accordance with said imaging display program, by inferring an amount of incident light obtained when said composition is input in accordance with said image inputting program, from said plurality of images which have been input and said correction parameters which have been set] synthesizing the plurality of images including said at least one image, the brightness of which is corrected by the brightness correcting means.

28. (Twice Amended) The recording medium according to claim 22, wherein [said image correcting program is designed to correct the image by changing an exposure ratio between a plurality of images, which is used as] said correction parameters[, in accordance with differences in brightness between said plurality of images displayed by using said image displaying program] determined by the correction parameter calculating program are exposure time ratios at which the plurality of images to be input by the image inputting program are picked up, respectively, and the correction parameter setting program has a function of displaying an imaginary adjustment knob on a display screen during the image display step such that each of the exposure time ratios is adjustable by a user.